



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/026,973	12/27/2001	Takashi Hattori	T&A-109	1785

7590 05/25/2004

MATTINGLY, STANGER & MALUR, P.C.
Suite 370
1800 Diagonal Road
Alexandria, VA 22314

EXAMINER

ROSASCO, STEPHEN D

ART UNIT	PAPER NUMBER
----------	--------------

1756

DATE MAILED: 05/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/026,973

Applicant(s)

HATTORI ET AL. 

Examiner

Stephen Rosasco

Art Unit

1756

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>4/2/04</u> . | 6) <input type="checkbox"/> Other: _____ |

Detailed Action

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over the submitted art to JP56030129 in view of Hatakeyama et al. (6,007,969).

The claimed invention is directed to a mask and a method of making a mask comprising a shade pattern containing at least nanoparticles and a binder, such as carbon in an organic film such as a photoresist film. The applicant discusses the limitations of the prior art in that if a shade pattern of a photomask is constituted of a resist it is impossible to obtain a sufficient shading characteristic against rays having a wavelength larger than 230 nm and therefore to completely function as a shading material.

JP56030129 teaches a photomask manufacturing process, which utilizes a radiation sensitive organic resist coated on a substrate, that when exposed to electron beams, becomes opaque in the exposed areas. This layer is then used as the photomask for continued exposure of the substrate.

The teachings of JP5603012 differ from those of the applicant in that the applicant teaches that the resist contains at least nanoparticles and a binder.

Hatakeyama et al. teach a method of ultra-fine fabrication of a surface of a target object comprising a semiconductor material composed of a group III element and a

group V element of the periodic table, said method comprising: dispersing on said surface a plurality of micro-particles such that said micro-particles form shields over first portions of said surface while remaining second portions of said surface remain unshielded; and

radiating an energy beam toward said surface in a direction substantially perpendicular thereto, wherein said energy beam comprises a beam selected from the group consisting of a fast atomic beam, an ion beam, an electron beam, a radiation beam, an atomic beam and a molecular beam such that said energy beam etches said second portions thereof while said micro-particles shield said first portions thereof, thereby forming a fabricated target object including a base having fine structures protruding therefrom.

And wherein said dispersing comprises applying to said surface a solution containing a dispersion of said particles and a solvent.

And wherein said micro-particles have a range of particle size of 0.1-10 nm and are selected from the group consisting of ferrite particles, zinc particles, cobalt particles and diamond particles.

And wherein said micro-particles have a range of particle size of 100 nm-10 μ m, and are selected from the group consisting of aluminum particles, graphite particles, gold particles and silver particles.

It would have been obvious to one having ordinary skill in the art to take the teachings of JP56030129 and combine them with the teachings of Hatakeyama et al. in order to make the claimed invention because incorporating particles in a resist is well

Art Unit: 1756

known to be used for increasing the scattering of light or in general to increase the opacity of the resist.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen Rosasco whose telephone number is 571-272-1389. The examiner can normally be reached on M-F from 9 to 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff, can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. For general Information call (571-272-1700).

A handwritten signature in black ink, appearing to read 'S. Rosasco', with a stylized initial 'S' and a long horizontal stroke at the end.

S. Rosasco
Primary Examiner
Art Unit 1756

S.Rosasco
5/21/04